

C L A I M S

1. A support body (7) for an apparatus having an extended nip (N) being defined by a contact surface (13) of the support body (7) and an opposed surface (4), said support body (7)
- 5
- has two side surfaces (69, 70) facing from each other and connecting to said contact surface (13), and a bottom surface (71) facing from the contact surface

10 (13), and

 - is arranged to be moved in the direction towards the opposite surface (4) by means of a loading system in order to load the nip (N) via said contact surface (13),
- 15 **characterized in** that the support body (7) is elastically deformable and has its contact surface (13) adaptable to the opposed surface (4) in interaction therewith.
2. A support body (7) according to claim 1,
- 20 **characterized in** that the support body (7) is provided with a holding device (8) arranged to form a counterstay for said two side surfaces (69, 70) of the support body (7) and directly or indirectly form a counterstay for said bottom surface (71) of the support body (7), and
- 25 that the support body (7) has a top portion (31) which has said contact surface (13) and being arranged to protrude from the holding device at least in the nip-forming operation position of the support body.
- 30 3. A support body (7) according to claim 2, **characterized in** that the holding device (8) has a space (16) for receiving the support body (7), said space (16) having two side surfaces (66, 67) for interaction with the opposite side surfaces (69 and 70, respectively) of

the support body (7), and a bottom surface (68) facing to the bottom surface (71) of the support body (7).

4. A support body (7) according to claim 3,
5 **characterized in** that said top portion (31) is arranged to protrude from the holding device (8), that said bottom surfaces (71, 68) of the support body (7) and holding device (8) are in direct contact with each other, and that the loading system comprises a power transmitting
10 device (50) arranged to move the holding device (8) together with the support body (7) in order to load the nip (N).

5. A support body (7) according to claim 4,
15 **characterized in** that the power transmitting device (50) includes hydraulic cylinders, pneumatic cylinders, jacks or similar.

6. A support body (7) according to claim 3,
20 **characterized in** that the bottom surface (71) of the support body (7) is located at a distance from the bottom surface (68) of the holding device (8) to define an enclosed chamber (57) therebetween, and that the loading system comprises a power transmitting device including a
25 pressure chamber formed by said enclosed chamber (57) and being arranged to be pressurized in order to move the support body (7) in relation to the holding device (8) in order to load the nip (N) while the support body being elastically deformed.

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7. A support body (7) according to claim 3,
characterized in that the bottom surface (71) of the support body (7) is located at a distance from the bottom surface (68) of the holding device (8) to define an
35 enclosed chamber (57) therebetween, that the loading

system comprises a first power transmitting device (50) arranged to move the holding device (8) together with the support body (7) from a first starting position with the contact surface (13) of the support body (7) at a distance from the opposite surface (4) to a second starting position with the contact surface (13) of the support body (7) located adjacent or close to the opposite surface (4), and a second power transmitting device (52) comprising a pressure chamber formed by said enclosed chamber (57) and being arranged to be pressurized with an increased pressure in order to move the support body (7) in relation to the holding device (8) to load the nip (N) while the support body being elastically deformed to form a nip-forming operation position.

8. A support body (7) according to any one of claims 1-7, **characterized in** that it is made in one piece of elastic material.

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9. A support body (7) according to any one of claims 1-7, **characterized in** that it is made of at least two layers (53) of elastic material, said layers being joined to a unit, and forming a contact zone each of the contact surface (13), and having different elasticities.

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10. A support body (7) according to claim 8 or 9, **characterized in** that it is made of rubber or polymer with good elasticity and good strength.

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11. A support body (7) according to claim 10, **characterized in** that the polymer is polyurethane.

12. A support body (7) according to any one of claims 1-11, **characterized in** that the load in the nip (N) varies from 0 to 3000 kN/m.

5 13. A support body (7) according to any one of claims 1-12, **characterized in** that the support body (7) has a dimension in the machine direction of 50-500 mm.

10 14. A holding device (8) for a support body (7) for an apparatus having an extended nip (N) being defined by a contact surface (13) of the support body (7) and an opposed surface (4), said support body (7)

- has two side surfaces (69, 70) facing from each other and connecting to said contact surface (13), and a
15 bottom surface (71) facing from the contact surface (13), and

- is arranged to be moved in the direction towards the opposite surface (4) by means of a loading system in order to load the nip (N) via said contact surface
20 (13),

characterized in that the support body (7) is elastically deformable and has its contact surface (13) adaptable to the opposed surface (4) in interaction therewith.

25 15. A holding device according to claim 14, **characterized in** that the holding device (8) is arranged to form a counterstay for said two side surfaces (69, 70) of the support body (7) and directly or indirectly form a counterstay for said bottom surface (71) of the support
30 body (7), and that the support body (7) has a top portion (31) which has said contact surface (13) and being arranged to protrude from the holding device at least in the nip-forming operation position of the support body.

16. A holding device according to claim 14,
characterized in that it has a space (16) for receiving
the support body (7), said space (16) having two side
surfaces (66, 67) for interaction with the opposite side
5 surfaces (69 and 70, respectively) of the support body
(7), and a bottom surface (68) facing to the bottom
surface (71) of the support body (7).

17. A holding device according to claim 15 or 16,
10 **characterized in** that said top portion (31) is arranged
to protrude from the holding device (8), that said bottom
surfaces (71, 68) of the support body (7) and holding
device (8) are in direct contact with each other, and
that the loading system comprises a power transmitting
15 device (50) arranged to move the holding device (8)
together with the support body (7) in order to load the
nip (N).

18. A holding device according to claim 17,
20 **characterized in** that the power transmitting device
includes hydraulic cylinders, pneumatic cylinders, jacks
or similar.

19. A holding device according to any one of claims
25 16-18, **characterized in** that the bottom surface (71) of
the support body (7) is located at a distance from the
bottom surface (68) of the holding device (8) to define
an enclosed chamber (57) therebetween, and that the
loading system comprises a power transmitting device
30 including a pressure chamber formed by said enclosed
chamber (57) and being arranged to be pressurized in
order to move the support body (7) in relation to the
holding device in order to load the nip (N) while the
support body being elastically deformed.

20. A holding device according to any one of claims 16-19, **characterized in** that the bottom surface (71) of the support body (7) is located at a distance from the bottom surface (68) of the holding device to define an enclosed chamber (57) therebetween, that the loading system comprises a first power transmitting device (50) arranged to move the holding device (8) together with the support body (7) from a first starting position with the contact surface (13) of the support body (7) at a distance from the opposite surface (4) to a second starting position with the contact surface (13) of the support body (7) located adjacent or close to the opposite surface (4), and a second power transmitting device (52) comprising a pressure chamber formed by said enclosed chamber (57) and being arranged to be pressurized with an increased pressure in order to move the support body (7) in relation to the holding device (8) to load the nip (N) while the support body being elastically deformed to form a nip-forming operation position.

21. An apparatus for the treatment of a fibre web (W) that is manufactured in a paper or board machine, comprising a first structural element (1) and a second structural element (2) which is movably arranged and having an opposite surface (4) for interaction with the first structural element (1) while forming an extended nip (N), said first structural element (1) comprising a movable clothing (6) and a support body (7) having a contact surface (13) which defines said nip (N) together with the opposite surface (4), said support body (7)

- has two side surfaces (69, 70) facing from each other and connecting to said contact surface (13), and a bottom surface (71) facing from the contact surface (13), and

- is arranged to be moved in the direction towards the opposite surface (4) by means of a loading system in order to load the nip (N) via said contact surface (13),

5 **characterized in** that the support body (7) is elastically deformable and has its contact surface (13) adaptable to the opposed surface (4) in interaction therewith.

22. An apparatus according to claim 21, **characterized in**
10 that the support body (7) is provided with a holding device (8) arranged to form a counterstay for said two side surfaces (69, 70) of the support body (7) and directly or indirectly form a counterstay for said bottom surface (71) of the support body (7), and that the
15 support body (7) has a top portion (31) which has said contact surface (13) and being arranged to protrude from the holding device at least in the nip-forming operation position of the support body.

20 23. An apparatus according to claim 21 or 22, wherein the support body (7) is designed according to any one of claims 1-13.

24. An apparatus according to any one of claims 21-23,
25 **characterized in** that also the second structural element (2) comprises a support body that has a contact surface forming said opposite surface (4), wherein both support bodies are designed according to any one of claims 1-13.

30 25. A press for the treatment of a fibre web (W) that is manufactured in a paper or board machine, comprising a first press element (1) and a second press element (2) which is movably arranged and having an opposite surface (4) for interaction with the first press element (1)
35 while forming an extended press nip (N), said first press

element (1) comprising a movable belt (6) and a press body (7) having a press surface (13) which defines said nip (N) together with the opposite surface (4), said press body (7)

- 5 - has two side surfaces (69, 70) facing from each other and connecting to said press surface (13), and a bottom surface (71) facing from the press surface (13), and
- 10 - is arranged to be moved in the direction towards the opposite surface (4) by means of a loading system in order to load the nip (N) via said press surface (13), **characterized in** that the press body (7) is elastically deformable and has its press surface (13) adaptable to the opposed surface (4) in interaction therewith.

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26. A press according to claim 25, **characterized in** that the press body (7) is provided with a holding device (8) arranged to form a counterstay for said two side surfaces (69, 70) of the press body (7) and directly or indirectly
- 20 form a counterstay for said bottom surface (71) of the press body (7), and that the press body (7) has a top portion (31) which has said press surface (13) and being arranged to protrude from the holding device at least in the nip-forming operation position of the press body.

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27. A press according to claim 25 or 26, **characterized in** that the opposite surface (4) and/or the press surface (13) are/is arranged to be heated.

- 30 28. A press according to any one of claims 25-27, wherein the press body (7) is designed according to any one of claims 1-13.

29. A press according to any one of claims 25-28,
- 35 **characterized in** that also the second press element (2)

comprises a press body that has a press surface forming said opposite surface (4), wherein both press bodies are designed according to any one of claims 1-13.

5 30. A method of forming an extended nip (N) in an apparatus that comprises a support body (7) designed according to any one of claims 1-13, **characterized by** the steps of:

- 10 - mounting the support body (7) in a holding device (8) designed according to any one of claims 14-20;
- loading the support body (7) by means of the loading system; and
- 15 - displacing the contact surface (13) of the support body (7) in the direction towards the opposite surface (4) under the influence of said loading in order to elastically deform the contact surface (13) and adaptation to the opposite surface (4).

20 31. A method of controlling the load in an extended nip (N) in an apparatus that comprises a support body (7) designed according to any one of claims 1-13, **characterized by** the steps of:

- designing the support body (7) of at least two layers of elastic material having different elasticity;
- 25 - mounting the support body (7) in a holding device (8) designed according to any one of claims 14-20;
- loading the support body (7) by means of the loading system; and
- 30 - displacing the contact surface (13) of the support body (7) in the direction towards the opposite surface (4) under the influence of said loading in order to elastically deform the contact surface (13) and adaptation to the opposite surface (4) in order to obtain an extended nip (N) having a load profile in
- 35 dependence of different elasticities of the layers.

32. The use of a support body (7) according to any one of claims 1-13 as a press body (7) in a press apparatus in a paper or board machine.

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33. The use of a support body (7) according to any one of claims 1-13 as a supporting foil for a carrying apparatus in a paper or board machine.

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34. The use of a support body (7) according to any one of claims 1-13 as a reeling support in a reel-up of a paper or board machine.

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